What is claimed is:

1. A circuit arrangement, comprising:

a linear variable differential transformer as a displacement sensor or force sensor;

a selection circuit which is connected to a primary coil of the transformer and which provides an output current for triggering the primary coil;

an analysis circuit which is connected to secondary coils of the transformer and which provides a measurement signal; and

a control circuit to trigger the selection circuit and the analysis circuit and to process the measurement signal provided by the analysis circuit is connected to the primary coil to calculate a temperature of the circuit arrangement, and is configured such that it determines the temperature-dependent ohmic resistance of the primary coil and calculates the temperature and corrects accordingly the measurement signal provided by the analysis circuit, the current having a trapezoidal characteristic through the primary coil with equally high rising edge and falling edge values, and the control circuit configured such that sampling values of a rectangular voltage picked up on the primary coil and of a voltage proportional to the current through the primary coil are taken at times at which the trapezoidal current has a constant characteristic.

2. The circuit arrangement according to claim 1, wherein the control circuit has an adding circuit with inputs connected to terminals at which a voltage proportional to the resistance value of the primary coil or a reference voltage are provided.

3. The circuit arrangement according to claim 2, wherein the reference voltage is a voltage proportional to the current through the primary coil.

4. The circuit arrangement according to claim 1, wherein sampling values are taken in a first and the second half of a period of the rectangular voltage picked up at the primary coil, and of the voltage proportional to the current through the primary coil, and in that difference values formed from the sampling values from the first half of the period and from the sampling values from the second half of the period are used as measurement values.

5. The circuit arrangement according to claim 1, wherein output ports of the secondary coils are connected to a control circuit, which is configured such that a sum of output voltages present at the output ports is compared to a setpoint value, and the control circuit interoperates with the selection circuit such that rising edge and falling edge values of a triangular output current of the selection circuit are varied in a manner inversely proportional to deviation of sum of the output voltages from the setpoint value.

6. The circuit arrangement according to claim 5, wherein the analysis circuit has two amplifier circuits, which are connected to one of the two secondary coils and amplify respective output signals, and the outputs of the amplifier circuits are connected to the control circuit.

7. The circuit arrangement according to claim 6, wherein the selection circuit has a rectangular voltage

generation circuit and an integration circuit triggered by the rectangular voltage generation circuit.

8. The circuit arrangement according to claim 7, wherein the rectangular voltage generation circuit is formed with a first resistor, having a first port connected to a third voltage source and a second port connected to the output of the rectangular voltage generation circuit, and with a second resistor, having a first port connected to a fourth voltage source and a second port connected via a switch controllable from the control circuit to the output of the rectangular voltage generation circuit, the voltages of the third and the fourth voltage source following a relationship

$$U3-Uref=Uref-U4$$

and Uref being a reference voltage.

9. The circuit arrangement according to claim 8, wherein the third and the fourth voltage source are configured such that they are controllable and their voltages can be adjusted via the control circuit.

10. The circuit arrangement according to claim 9, wherein the integration circuit is formed with an operational amplifier having an output coupled back to the inverting input via a capacitor, with a bi-directional Zener diode being switched in parallel to the capacitor.

11. The circuit arrangement according to claim 10, wherein the analysis circuit is configured such that sampling values of the rectangular difference between the

output voltages of the secondary coils picked up on the coils are taken in the first and second halves of the period, and the difference values formed from the sampling values from the first half of the period and from the sampling values from the second half of the period are output as the measurement signal.